

IN THE CLAIMS:

A complete listing of all the claims is now presented as follows:

Claim 1. to 17. (Cancelled).

Claim 18. (Currently Amended).

Process for the separation and purification of ~~an aqueous~~ a mixture comprising main components acetic acid, formic acid, water and high boilers

by extraction by means of ~~with~~ a solvent in a circulation process in a first step and a subsequently fractionation of an extract stream in a sequence of distillation steps, which comprises

feeding a raffinate stream containing a major part of water to a solvent stripping column (11) for removal of the water;

conveying an extract stream to a solvent distillation column (8) from which, in a first step, a mixture (A) comprising water and solvent is separated off via a top of column (8) and a mixture (B) comprising acetic acid, formic acid and high boilers is separated off via a bottom of column (8);

separating the formic acid off from the mixture (B) in intermediate distillation column (29) and subsequently

fractionating a remaining mixture (B) into ~~pure~~ purified acetic acid and high boilers in an acetic acid distillation column (5), and

conveying the mixture (A) to a phase separator (25) from which an aqueous phase containing residual solvent is recirculated to the solvent stripping column (11) and an organic phase is recirculated to an extractor (7).

Claim 19. (Previously Presented).

Process according to Claim 18, comprising
operating the solvent distillation column (8) under atmospheric pressure.

Claim 20. (Previously Presented).

Process according to Claim 18, comprising
operating the solvent distillation column (8) under a superatmospheric pressure of from $1 \cdot 10^5$ to $50 \cdot 10^5$ Pa.

Claim 21. (Previously Presented).

Process according to Claim 18, comprising
operating the extractor (7) in at least one stage.

Claim 22. (Previously Presented).

Process according to Claim 18,

wherein a solvent circuit in the extractor (7) runs countercurrent to crude acid.

Claim 23. (Previously Presented).

Process according to Claim 18,

wherein the solvent used is selected from the group consisting of a saturated hydrocarbon having from 4 to 8 carbon atoms, an unsaturated hydrocarbon having from 4 to 8 carbon atoms, a cyclic hydrocarbon having from 4 to 8 carbon atoms, and mixtures thereof.

Claim 24. (Previously Presented).

Process according to Claim 18,

wherein the solvent used is at least one compound selected from the group consisting of ethers, esters, ketones, hydrocarbons and alcohols.

Claim 25. (Previously Presented).

Process according to Claim 18,

wherein the solvent used is at least one compound selected from the group consisting of methyl tert-butyl ether, diisopropyl ether, di-n-propyl ether, ethyl butyl ether, ethyl acetate and isopropyl acetate.

Claim 26. (Previously Presented).

Process according to Claim 18, comprising
carrying out the extraction at a temperature of from
0 to 60°C and at a pressure of from $1 \cdot 10^5$ to $20 \cdot 10^5$ Pa.

Claim 27. (Previously Presented).

Process according to Claim 18,
wherein the mixing ratio of solvent to crude acid
(volume/volume) is from 0.5 to 20.

Claim 28. (Previously Presented).

Process according to Claim 18, comprising
operating intermediate distillation column (29) at a pressure
of from $1 \cdot 10^5$ to $20 \cdot 10^5$ Pa.

Claim 29. (Currently Amended).

Process according to Claim 18, comprising
operating solvent distillation column (8) ~~in such a way so~~
that ~~small amounts of water remain~~ remains in a product stream.

Claim 30. (Previously Presented).

Process according to Claim 18,
wherein intermediate distillation column (29) has a side
offtake at which a substream is taken off..

Claim 31. (Currently Amended).

Process according to Claim 18,

wherein the mixture (B) comprising the components acetic acid, formic acid, high boilers and residual water is fractionated in an intermediate distillation column (29) into a bottom product which is free of formic acid and comprises acetic acid and high boilers and a mixed top product comprising formic acid, water and ~~small amounts of~~ acetic acid;

where a bottom product from column (29) is fractionated in a downstream acetic acid distillation column (5) into ~~pure~~ purified acetic acid and high boilers and a top product from intermediate distillation column (29) is fed to a ~~pure~~ purified formic acid distillation column (33) where it is fractionated into ~~pure~~ purified formic acid as top product and a mixed bottom product comprising acetic acid, formic acid and water which is recirculated to an extract stream to the solvent distillation column (8).

Claim 32. (Currently Amended).

Process according to Claim 31, comprising

operating the ~~pure~~ purified formic acid distillation column (33) at a pressure which is from $0.1 \cdot 10^5$ to $25 \cdot 10^5$ Pa lower than a pressure in the intermediate distillation column (29).

Claim 33. (Currently Amended).

Process according to Claim 18,

wherein heat of condensation in the distillation column (29) is used selected from the group consisting of heating ~~the~~ a formic acid distillation column (33), heating the solvent stripping ~~distillation~~ column (11), and heating both column (33) and column (11).

Claim 34. (Currently Amended).

Process according to Claim 18,

wherein ~~the~~ heat of reaction of ~~the~~ an upstream reaction (~~for example a catalytic gas-phase oxidation of hydrocarbons~~) is used for heating at least one selected from the group consisting of the solvent distillation column (8), the distillation column (29), ~~the~~ an acetic acid distillation column (5) and ~~the~~ a formic acid distillation column (33).